CALIBRATION OF
TOP/BOTTOM-HEATER TEMPERATURE ESTIMATION MODEL

OBTAINING ESTIMATED VALUES AND MEASURED VALUES OF
TEMPERATURES SENSORS S4 AND S5
UNDER STABILIZED PRESET TEMPERATURE — 21

CALCULATING CORRECTION VALUES
(MEASURED VALUE MINUS ESTIMATED VALUE)
FOR TEMPERATURE SENSOR TEMPERATURES — 22

1. DERIVING MATRIX Kt EXPRESSING CORRELATION BETWEEN CHANGE IN SURFACE TEMPERATURE $\triangle$ Tt OF TOP HEATER AND CHANGE IN TEMPERATURES $\triangle$Ts1 - $\triangle$Ts5 OF SENSORS S1 - S5
$\triangle$Tt - $Kt \cdot$ [$\triangle$Ts1, $\triangle$Ts2, $\triangle$Ts3, $\triangle$Ts4, $\triangle$Ts5]

2. DERIVING MATRIX Kb EXPRESSING CORRELATION BETWEEN CHANGE IN SURFACE TEMPERATURE $\triangle$ Tb OF BOTTOM HEATER AND CHANGE IN TEMPERATURES $\triangle$Ts1 - $\triangle$Ts5 OF SENSORS S1 - S5
$\triangle$Tb - $Kb \cdot$ [$\triangle$Ts1, $\triangle$Ts2, $\triangle$Ts3, $\triangle$Ts4, $\triangle$Ts5] — 23

1. TEMPERATURE OF TOP HEATER =
[ESTIMATED TEMPERATURE ESTIMATED BY STANDARD THERMAL MODEL]
+ $Kt \cdot$ [0, 0, 0, (ESTIMATED TEMPERATURE MINUS MEASURED TEMPERATURE OF TEMPERATURE SENSOR S4), 0]

2. TEMPERATURE OF BOTTOM HEATER =
[ESTIMATED TEMPERATURE ESTIMATED BY STANDARD THERMAL MODEL]
+ $Kb \cdot$ [0, 0, 0, (ESTIMATED TEMPERATURE MINUS MEASURED TEMPERATURE OF TEMPERATURE SENSORS S5)] — 24

STORING CALIBRATED THERMAL MODEL
IN THERMAL MODEL STORAGE PART — 25

RETURN

FIG. 8